11-21-2007

DDASaccident581

Humanitarian Demining Accident and Incident Database
AID

DDAS Accident Report

Accident details

Report date:	21/06/2008	**Accident number:**	581
Accident time:	07:58	**Accident Date:**	21/11/2007
Where it occurred:	MF: A-Kurmuk, M/F NR 91, DA NR 286.	**Country:**	Sudan
Primary cause:	Field control inadequacy (?)	**Secondary cause:**	Management/control inadequacy (?)
Class:	Missed-mine accident	**Date of main report:**	05/12/2007
ID original source:	None	**Name of source:**	UNMAO Sudan
Organisation:	[Name removed]		
Mine/device:	PRB M35 AP blast	**Ground condition:**	bushes/scrub dry/dusty sparse trees
Date record created:		**Date last modified:**	21/06/2008
No of victims:	1	**No of documents:**	2

Map details

Longitude:		**Latitude:**	
Alt. coord. system:		**Coordinates fixed by:**	
Map east:	E 034° 17' 18.1"	**Map north:**	N 10° 32' 59.5"
Map scale:		**Map series:**	
Map edition:		**Map sheet:**	
Map name:			

Accident Notes

inadequate training (?)

inconsistent statements (?)

mine/device found in "cleared" area (?)

Accident report

Details of this accident were made available as a collection of *.PDF files in June 2008. The conversion of these documents to a DDAS file has led to some of the original formatting being lost. The demining group involved was a serving military unit operating with UNMIS. Names of personnel and the demining group involved have been removed. Some detail related to the military unit has been omitted (but is held on record). Text in square brackets [ ] is editorial.

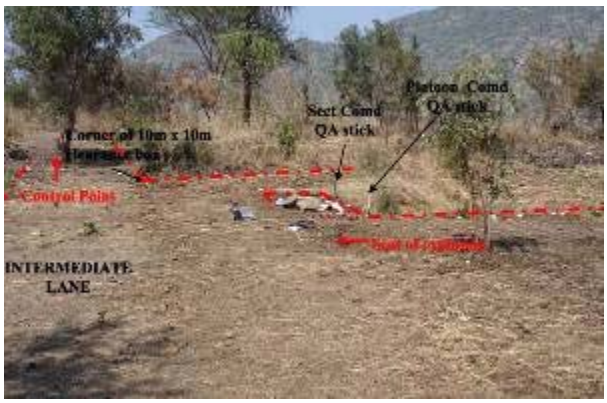
General information

Summary: At approximately 07:55hrs on 21 November 2007 a mine accident occurred within the hazardous area of Minefield NR 91 during operations being conducted as part of Task NR 206. The accident resulted in injuries being sustained by a member of the MCT 1 of the [Demining group]-II.

As a result of the injuries sustained by the casualty, casevac from the hazardous area to the Level 1 facility at Kurmuk was required and subsequently from there to the Level 2 facility at Damazin.

A PI was convened in order to document the findings resulting from the investigation into the accident, relevant events pre and post accident, to provide conclusions as to the probable and most likely causes and to provide pertinent recommendations aimed at reducing the possibility of such an occurrence happening again and at improving and/or correcting procedures pre and/or post accident.

General Geographic Information: In summary M/F NR 91 lays parallel to the Sudan/Ethiopian border on a North/South axis with the nearest inhabited location being Kurmuk. The general landscape is typical of the area i.e. undulating ground, alternating between flat heavily vegetated areas and small rocky outcrops (‘jebeles’) in many places. Underfoot the ground is covered by heavy vegetation and is rock-strewn on the surface and at sub-surface levels. In general, the minefield is laid on the high ground sloping down to a river which marks the border.



[The accident site after post-accident marking had been removed.]

Specific Geographic Information: The lay of the land at the scene of the accident finds it sloping away from the Control Point area in the west down towards the border in the east. The clearance activity was being conducted up the slope in an east to west direction. The immediate vicinity of the accident has been cleared of vegetation and provides unrestricted access. In the surrounding hazardous areas the vegetation is heavy. Underfoot the ground is firm in the cleared areas. The soil and surface conditions are typical for the area.

Weather: The weather and conditions at the time of the accident was typical for the time of the day and year i.e. relative early morning coolness, dry, bright sunshine, clear blue skies and daylight giving excellent and unrestricted vision.

Priority: Task NR 206 is rated by the Land Impact Survey (LIS) as ‘HIGH’. It therefore was given the appropriate priority by United Mission in Sudan (UNMIS).

Type of Task: Task NR 206 is a ‘minefield clearance’ which involves 2 types of demining procedures, manual mine clearance (MMC) and mine detection dogs (MDD. The use of MDD has been restricted to support to [Demining group Team]-I over the period 06 May – 24 May 2007 during which they verified/cleared 3,812m2.

During/Post-accident: The following details apply:

General Site Layout & Marking: The general site layout and marking viewed by the PIT [Preliminary Investigation Team] at both the non-hazardous and hazardous areas was of a satisfactory standard and in compliance with accredited SOPs and/or other applicable documentation.

Scene of Accident: When the PIT arrived at the scene of the accident there was initially a great deal of confusion and concern. The site marking encountered indicated that the specific spot of the accident had occurred within a hazardous area. After consultation and discussion with relevant appointments of the [Demining group]-II, it was determined that the scene of the accident had been interfered with and the marking stones moved. Following instructions from the NQAC, the site marking was restored.

NOTE: There is no way of determining or confirming if this is accurate or reflected the marking prior to the accident occurring.

Other: Close to the vicinity of the accident, near to the small tree, pieces of insulating tape were found. This was considered to have been evidence of the demolition conducted the previous day.

[The “crater” before excavation.]

[The crater after excavation. See Analysis.]

During Accident: The following applies:

During the minefield briefing and prior to the explosion/accident occurring it was noted that the soldier giving the briefing was neither the Platoon Commander nor his Deputy. The soldier providing the briefing was in-fact normally employed as a section commander. This was to be commented on and queried at the completion of the briefing but that point was not reached. This is contrary to the [Demining group]-II accredited SOPs and the IP for Task NR 206 both which clearly state that either one of the aforementioned must be on-site at all times unless prior authorisation for their absence is sought from and given by UNMAO. Authorisation for this had not been given.

On-site Procedures: Post-accident procedures on-site and during the immediate aftermath of the accident were not witnessed and so cannot be commented on. However the PIT were witness to the speed and efficiency that the casualty was evacuated from the hazardous area to the safe area which was completed effectively and well within the required standards of the accredited SOPs. This fact is even more commendable given the fact that it was the Section Commander (Acting) that was the casualty and would have necessitated a shift in command and control and the taking of the initiative by individuals unknown. Comment was provided by the UNMAO Medical Advisor who was at the Level I clinic that the standard of medical aid given in the hazardous area and prior to arrival at the Level I clinic was excellent.

Equipment and PPE: There has been no deviation from accredited SOPs regarding the equipment, tools, dress and PPE nor has there been adverse comment regarding its standard, serviceability and/or application throughout the duration of the task. This same statement applies to the day of the accident.

Mines/UXO: General: To date 122 anti-personnel mines have been located and destroyed by the [Demining group]. These have been of the following designations; 101 x PRB M35 and 20 x M14. All of these mines have been found using the `complete excavation' method. Of these, [Demining group] -II have located/destroyed 91 x PRB M35 and 18 x M14. According to the records and information received from the [Demining group]-II all the mines have been located at a depth of 2 – 4cm (see Appendix 11). In addition 22 x UXO of various designations have been located/destroyed. Of these, [Demining group]-II have located/destroyed 14 x UXO. [A]… number of M14s had been located within close proximity of the accident with one being located and destroyed the previous day.

Evidence of remining: There was no evidence of re-mining in the area of the accident. It is acknowledged by the PIT that there are continual unauthorised incursions into the hazardous area by locals and other persons unknown. This has been evidenced in various ways including the cutting of wood, human excrement deposits, dead animals being deposited and more recently acts of vandalism to name a few. This issue is well documented and recorded. It is further acknowledged that there had been activity of wood cutting close to the accident scene the night prior to the accident. However, as already detailed, there was no evidence of re-mining within the immediate vicinity of the accident. The only witness that was available to provide information relating to this matter was [Name removed]. He was questioned on this matter a number of times and stated both during the interview with the PIT at the CP and once again whilst at the scene of the accident that there was no evidence of re-mining or interference with the specific location of his clearance lane or that he did not notice any evidence of this nature in the immediate vicinity. He commented that there had been some wood cutting close to the scene but that no evidence of disturbance in the immediate area of his working lane was evident. He further states in his statement that he inspected his worksite for signs of interference and did not witness any. This is in accordance with accredited SOPs and normal procedure prior to commencing work.

Initial report form [Demining group]

Date: 22 Nov 2007

To: All Concerned

Subject: Detailed Written Report of Mine Accident

NTSG Edition 8, Chapter 15, Para 4.1.c refers (to be forwarded within 48 hours of accidents).

1. General. [Demining group] started its demining in minefield A-Kurmuk on 5 August 07 after getting accreditation certificate of United Nations Mine Action Office (UNMAO). On 21 November at 0758 hours, a mine accident occurred in the cleared area of minefield - A Kurmuk. In this accident, left foot of Acting Section Commander [the Victim] was seriously injured.

2. Sequence of Events. Various demining activities and events till accident are described below in chronological order :-

a. Both the demining platoons (A and B) left [Demining group] Camp at 0630 hours for the demining site.

b. As per SOP, demining was started at 0730 hours. UNMAO officials (National QA Coordinator Mr. [Name removed], Ops Officer Mr. [Name removed] and Sub office QA Officer Mr. [Name removed]) also arrived at the location of A Platoon site (Control Point) for routine visit.

c. [The Victim], who was performing the duties of Acting Section Commander, was supervising the demining work of his under command deminers. He was supervising the deminer's work while standing in the already cleared area.

d. At 0758 hours when [the Victim] was moving in the cleared area , an Anti personnel mine exploded under his left foot.

e. Casualty was provided medical support on the site as per SOP and evacuated to the Platoon medical point. Medics provided medical treatment and casualty was further evacuated to level-I hospital of Pakistan Demining Company — II.

f. By 0805 hours, all concerned officials (Sector HQ COO, Radio Room Damazine, Aviation Ops Officer) were immediately informed on telephone by the Commanding Officer about the accident. They were asked to start preparing for medical evacuation from Kurmuk to level-II hospital. At 0945 hours, casualty was evacuated through helicopter to level-II hospital Ed-Damazin.

g. [The Victim] has been further evacuated to level-III hospital Khartoum on 22 November 07.

h. Due to severe nature of injury, he will be shifted to level-IV hospital Kenya (for orthopedic surgery) on 24 November 2007.

3. Important Facts of Demining Operation at Kurmuk. Following important facts are highlighted regarding ongoing demining operation at Kurmuk:-

a. Method Used. [Demining group] is using 100% full excavation method for the demining operation in this minefield. In this method, minefield area is completely excavated up to 15 cm from top of the surface. Employment of this method does not leave the possibility of missing any mine. So far, [Demining group] has found and destroyed 122 mines using this method. It is worth mentioning that all the 122 mines have been found up to a maximum depth of 2-4

cm. Photos at Annex A highlight the full excavation up to 15 cm being carried out and the location of mines.

b. Location of Accident. Area where accident happened was cleared few days before (from 8 to 13 November 07). There were routine movements of deminer, section commander, platoon Commander and platoon EOD Commander in this cleared area.

c. Quality Assurance (QA) Check. UNMAO QA Officer [Name removed] had paid number of visits to the demining site and carried out QA of area cleared by [Demining group]. During the UNMAO QA visits, work of [Demining group] was found as per SOP. UNMAO QA visited the site of A Platoon (site where accident happened) on 15 November 2007 and carried out QA check of all the area cleared up to 15 November and found the demining work as per SOP.

d. Point of Concern. On 18 September 07, some unknown individuals created a lot of disturbance inside and in the adm areas of both the platoon. Matter was reported to Sector HQ immediately. Deputy Sector Commander came to Kurmuk to see the situation and also held meeting with local authorities.

4. UNMAO Board of Inquiry (B01). After the mine accident, UNMAO National QA Coordinator informed undersigned that a BOI comprising Chairman (UNMAO National QA Coordinator) and 2xmembers (UNMAO Ops Officer and UNMAO QA Officer) has been has been convened by the UNMAO HQ. Till 2130 hours 22 November 2007, PDC-II has not received any convening orders from the UNMAO HQ. It is mentioned that above mentioned board started the inquiry at the site at about 1030 hours on 21 Nov 07, undertook the statements of various individuals and completed their inquiry formalities by 1400 hours the same day. PDC-II provided all the original documents, log books QA forms etc, asked by the board at Kurmuk. All members of the board moved back to Damazine at about 1500 hours, 21 November.

BOI asked for the original documents to take it along with them which was regretted, however, photo copy of all the required documents were handed over to the board on 23 November 07 at Damazine. It is also pertinent to mention that composition of the board (which has started the inquiry) is not in accordance with NTSG (Chapter 15, para 3.3 c). A member of a senior rank (major or Lt Col) from [Demining group] is very important which is still missing. According to the NTSG there should be a member from third party to have transparency in inquiry. Completion of Inquiry in such a hasty manner (by the above mentioned board) of such kind of serious incident is not understood. It is suggested that all members (as per convening orders) be assembled at Kurmuk to complete the inquiry, covering all legal formalities, to reach at concrete findings and recommendations.

5. Inquiry by UNMIS. Sector Headquarters has also issued convening orders to start the inquiry. This board will be headed by a Lt Col (CO tpt Coy) and two other members from the sector. Board will assemble at Kurmuk on 25 November 07.

6. Suspension of Work. UNMAO officials have suspended the demining work. Both the platoons will start the demining work after completion of Court of Inquiry and its findings

7. Forwarded for information please.

[Signed]

Court Of Inquiry

To Inquire Into The Circumstances Under Which [the Victim] Of [Demining group] Got Injured (Left Foot Heel) On 21 November 2007 In Minefield Area Due To The Mine Blast.

1. INTRODUCTION

1.1 At 07:58hrs on 21 November 2007, a mine accident occurred resulting in injury to a deminer from the [Demining group].

1.2 The mine accident occurred at N 10° 32' 59.5" E 034° 17' 18.1". This location falls within the area being cleared by the Mine Clearance Team 1 (MCT 1) of the [Demining group].

1.3 The clearance task is referred to in the Information Management System Mine Action (IMSMA) as Minefield Northern Region 91 (M/F NR 91) and Danger Area Northern Region 286 (DA NR 286).

1.4 The task falls within the area of responsibility (AOR) of the Damazin United Nations Mine Action Office (UNMAO) which in turn falls within the AOR of the United Nations Northern Regional Mine Action Office (UNNRMAO) based in Kadugli.

1.5 As a result of this accident, a Board of Inquiry (BOI) was convened … in order to investigate the aforementioned accident. [Reference A, Convening order, omitted.]

2. REFERENCES

2.1 Reference B: As a result of the aforementioned mine accident a 'Preliminary Investigation' (PI) was conducted. A report, Reference B, providing the complete detail of the PI is included as `Inclusion 2' to this report [reproduced above]. This is required to be read in conjunction with this report as it provides a significant amount of pertinent detail not otherwise repeated within this report but that was used to assist the BOI throughout its deliberations and in arriving at the conclusions and subsequent recommendations as recorded within this report.

2.2 Reference C: Is the result of the 'Court Of Inquiry To Inquire Into The Circumstances Under Which [the Victim] Of [Demining group] Got Injured (Left Foot Heel) On 21 November 2007 In Minefield Area Due To The Mine Blast' conducted by the [Demining group]. This report is included at 'Inclusion 3' to this report. This is required to be read in conjunction with this report as it provides a significant amount of pertinent detail not otherwise repeated here but that was used to assist the BOI throughout its deliberations and in arriving at the conclusions and subsequent recommendations asrecorded within this report.

2. AIM

2.1 The aim of this report is to:

2.1.1 Provide a brief summary of the significant events/activities conducted during the BOI.

2.1.1 To provide conclusions arrived at as a result of the findings of the BOI.

2.1.3 To provide recommendations resulting from the aforementioned conclusions.

3. SUMMARY OF SIGNIFICANT EVENTS/ACTIVITIES CONDUCTED BY THE BOI

3.1 The following … provides summarised details of the significant events/activities conducted by the BOI and that resulted in the findings, conclusions and recommendations:

1. 03/0900/Dec07: BOI commenced: The BOI met at the [Name removed] in Kurmuk

2. 03/0900/Dec07: Opening address: The BOI Chairman opened the BOI with an introduction aimed at ensuring the BOI members were appraised of the aims of the BOI, the conduct and the agenda.

3. 03/0920/Dec07: Documentation Issue: The BOI members were issued with the complete set of documents relating to the BOI. Most significantly this included References B and C. A list of other pertinent documents that were available can be seen at paragraph 3.2.

4. 03/0920/Dec07 — 03/1100/Dec07: Document Review: The BOI Members read through the provided documentation in their own time appraising themselves of all information and detail recorded to date.

5. 03/1100/Dec07 — 03/1250/Dec07: Document Review Discussion: The BOI members were individually invited to air any points resulting from the document review that required clarification and/or confirmation.

6. 03/1250/Dec07 — 03/1320/Dec07: Break.

7. 03/1320/Dec07 — 03/1500/Dec07: Site visit: The BOI departed the [Demining group] Camp for the minefield in order to view the scene of the accident and confirm/clarify the details of the document review and raise any other issues.

8. 03/1500/Dec07 — 03/1600/Dec07: Confirmation of site visit: Confirmatory discussions confirming findings/conclusions arrived at on-site.

9. 03/1600/Dec07 — 03/1725/Dec07: Conclusions discussion: Discussions aimed at confirming evidence/facts and at arriving at conclusions.

10. 03/1725/Dec07 — 03/1810/Dec07: [Name removed] (QA Officer) witness called: Interview of UNMAO QA to confirm statement and to question specifics.

11. 03/1810/Dec07 — 03/1840/Dec07: Conclusions & Recommendations discussions continue: Conclusions and recommendations drafted, agreed upon and finalised by the BOI members.

12. 03/1850/Dec07: BOI proceedings closed: BOI proceeding closed with the agreement of the Conclusions & Recommendations and with the understanding that the BOI members will meet the morning of the 04 Dec to sign the draft of the agreed Conclusions & Recommendations.

13. 04/0915/Dec07: Signing of drafted Conclusions and Recommendations: BOI met to sign agreed Conclusions and Recommendations (see Inclusion 4). Discussion ensued regarding additional requests from 2 members of the Board (see paragraph 4.3 for detail).

14. 04/1130/Dec07: BOI dispersed.

3.2 The following provides a list of significant documentation other than References B and C that was made available to the BOI and that was utilised to varying degrees during its deliberations:

3.2.1 Sudan Mine Action Programme (SudanMAP) National Technical Standards and Guidelines (NTSG), Part 1, Edition 8.

3.2.2 [Demining group] United Nations Mission in Sudan (UNMIS) Standard Operating Procedures (SOP) — September 2007

3.2.3 Task Dossier NR 206

3.2.4 [Demining group] On-Site Documentation including:

3.2.4.1 Communication Log: Dating back to 24 October 2006 this documentation, whilst lacking in detail, is consistent throughout and provides the basic detail of daily work commencement, completion and significant events i e mine finds throughout the time of the task. The final log provided provides the detail of the mine accident.

3.2.4.2 External QA Log: This dates back to 24 June 2006 and provides the IMSMA QA reports for all External QA inspections and/or monitoring conducted by the QAO since this time. The final report is dated 15 November 2007.

3.2.4.3 [Demining group] QC Log: This dates back to 24 October 2006. Whilst it is considered to lack critical detail, it was found to be consistent throughout and provide the basic detail and results of internal QC conducted by the [Demining group] throughout the time of the task. The final log is dated 20 November 2007.

NOTE: Henceforth, the term [Demining group] when used refers to both [Demining group] I and II.

3.2.4.4 Visitors Log: This was found to be concise and in order.

3.2.4.5 Casevac Log: This was found to have 5 entries commencing 13 August 2007 and detailing `casevac exercises' conducted that day and monthly through until 05 November 2007. The final entry in this log is the casevac of the casualty as a result of the subject matter mine accident.

3.2.2.6 Site Map/Sketch: Providing details of the site layout, clearance to date, mines found/destroyed etc

3.2.2.7 Accident Site Sketch: This provided detail of the immediate and local vicinity of the mine accident. It can be found at Exhibit 0 of Reference C and has also been incorporated at Appendix 12 of Reference B. [Not reproduced.]

3.2.5 The following Witness Statements were presented to the BOI:

3.2.5.1 Sergeant [Name removed] — Usual role Section Commander of Section-1, MCT-1 of [Demining group]-II but was in the role of Acting Platoon Commander of MCT-1 on the day of the accident. This witness provided 2 statements which can be seen in References B and C and Inclusions 2 & 3 respectively.

3.2.5.2 Private [Name removed] — Deminer in Section-1, MCT-1 of [Demining group]-II. This witness provided 2 statements which can be seen at References B and C respectively and Inclusions 2 & 3 respectively.

3.2.5.3 [The Victim] — Usual role Deminer in Section-1, MCT-1 of [Demining group]-II but was in the role of Acting Section Commander, Section-1 of MCT-1 on the day of the accident. This witness is the casualty and his statement can be found in Reference C/Inclusion 3.

3.2.5.4 Private [Name removed] — Usual role of Deminer in Section-2, MCT-1 of [Demining group]-II but was in the role of Acting Section Commander, Section-2 of MCT-1 on the day of the accident. This witness statement can be found in Reference C/Inclusion 3.

3.2.5.5 Sergeant [Name removed] — Usual role Section Commander in Section-1, MCT-1 of [Demining group]-II but was in role of Acting Deputy Platoon Commander of MCT-1 on the day of the accident. This witness statement can be found in Reference C/Inclusion 3.

3.2.5.6 Captain [Name removed] — Platoon Commander, MCT-1 of [Demining group]-II. This witness statement can be found in Reference C/Inclusion 3.

3.2.5.7 AWO [Name removed] — Deputy Platoon Commander, MCT-1 of [Demining group]-II. This witness statement in the form of questions/answers can be found in Reference C/Inclusion 3.

3.2.5.8 [Name removed] — UNMAO QAO Damazin sub-office. The normal and routine duties of this witness include those QA duties stipulated by UNMAO and covers the mine action activities of [Demining group]-II/ This witness statement can be found at `Inclusion 5' of this report.

3.2.6 Other documentation as per the following list and included as 'Inclusion 6' of this report were also presented to the BOI:

3.2.6.1 Initial Contact Report of Mine Accident

3.2.6.2 Initial Detailed Report

3.2.6.3 Detailed Written Report of Mine Accident

3.2.6.4 BOI Mine Accident — Letter from [Demining group] CO to UNMAO Sudan MAP Director of Mine action.

4. CONCLUSIONS

4.1 Based on the events summarised in the Table at paragraph 3.1, the BOI arrived at the following conclusions:

4.1.1 Conclusions Directly Impacting On The Accident: Based on the BOI findings it is concluded that the following had a direct impact on the accident occurring and its subsequent results:

4.1.1.1 That the accident is considered to have been caused by the detonation of an explosive device most likely to have been an anti-personnel mine of unknown designation.

4.1.1.2 That, from the investigation of the seat of the explosion, the floor of the crater caused by the explosion was at 18 cm below the surrounding ground level.

4.1.1.3 That, from the investigation of the seat of the explosion, excavation during clearance operations in the specific location of the explosion was at a depth of 11cm.

4.1.1.4 That, from an investigation of areas randomly chosen and within the immediate vicinity of the accident spot, required clearance depths were found to have been achieved i.e. 15cm.

4.1.1.5 That there was absolutely no evidence of any kind to suggest that re-mining had taken place.

4.1.1.6 That the accident was the result of a missed mine during clearance operations.

4.1.1.7 That clearance of the specific area of the accident had not achieved the standards required for the task i.e. that the 15cm depth had not been achieved.

4.1.2 Conclusions That May Have Directly Or Indirectly Impacted On The Event: Based on the findings of the BOI the following may have had a direct or indirect impact on the accident occurring and its subsequent results:

4.1.2.1 The continual rotation of appointments and of individuals conducting roles that they were not accredited to do so and/or had not received training for.

NOTE: This practice had been observed previously (15/09/07) by the QAO and should have been appropriately actioned and recorded at that time thus possibly ensuring that it was not repeated.

4.1.2.2 The QC methodology and process is not sufficiently effective to ensure that an incident of a missed mine will not occur i.e. is there a requirement for additional QC in the proximity where there have been mines found?

4.1.2.3 The lack of evidence that Internal QA as per accredited SOPs had been conducted.

4.1.3 Other Conclusions: Based on the findings of the BOI the following additional conclusions that had no direct or indirect impact on the accident or the subsequent results have been arrived at:

4.1.3.1 That the casualty evacuation from minefield, the immediate medical care and the subsequent care at the Level 1 facility was of an exemplary standard. This is to be commended.

4.1.3.2 That documented procedures i.e. those in accredited SOPs, NTSG and other applicable documentation, had not been applied as is the requirement. This particularly applies to the manning and organisational structure of the MCTs and of CASEVAC request procedures.

4.1.3.3 That on-site record keeping and details by the [Demining group]-II MCTs is not sufficiently accurate and detailed to provide the necessary auditable trail of information required in the event of an incident such as this occurring or indeed for general everyday checks. This is particularly applicable with regards to details of:

4.1.3.3.1 The details of the deminer and the area/lane he has cleared, when he cleared it and the method used.

4.1.3.3.2 The details of any QC conducted, who conducted it, the specific area that was QC'd, when it was QC'd, the methodology used to and the results/actions.

4.1.3.4 It is concluded that the UNMAO QA records are not sufficiently accurate enough to provide an auditable trail of the exact nature of the visit but more specifically which area was visited, any actions carried out and findings/comment relevant to that specific area.

4.1.3.5 Whilst it is acknowledged that the [Demining group]-II QC methodology for 'complete excavation' as detailed within the accredited SOPs i.e. 'In case of complete excavation method, the excavated lane will be checked by the section commander by making 1 x 1 sq m and 15 cm deep trench for correct width (1m) and depth (15cm)' is sufficient in its intent it is concluded that the detail needs expanding on by quite some margin as it does not provide a significant amount of information that is required i.e.

4.1.3.5.1 Where is the QC to be conducted i.e. what part of the lane/area and who decides?

4.1.3.5.2 Under what circumstances will the QC area i.e. 1m2 be increased and who decides?

4.1.3.5.3 What are the failure criteria?

4.1.3.5.4 What is the exact methodology?

4.1.3.6 That there is a requirement for UNMIS/UNMAO to clearly define the reporting chain and chain of command with regards to actions, events, occurrences and incidents in the minefield. This will avoid confrontations such as that that ensued with regards to the on-site documentation.

4.1.3.7 [Demining group]-II on-site documentation and documentation from other agencies often did not contain/provide sufficient detail and was sometimes poorly kept.

4.2 As detailed in the 'Comments/Remarks' column of Ser 13 of the table at paragraph 3.1 an authenticated copy of the agreed 'Conclusions' can be found at Inclusion 4.

4.3 As detailed in the Comments/Remarks' column of Ser 13 of the table at paragraph 3.1, a discussion surrounding the exclusion of a specific paragraph from Reference B and the inclusion of an additional conclusion ensued at the meeting arraigned for the BOI members to sign-off on the agreed 'Conclusions & Recommendations'. The Chairman and BOI Member 1, [Name removed], disagreed that either of these issues should be should be addressed as requested. The Chairman made the final decision that the 2 Members requesting the changes should provide relevant statements detailing this matter but that no additions would be made to the previously agreed `Conclusions' and that the paragraph from Reference B would not be removed. The orilinals of the aforementioned statements can be found at 'Inclusion 7' with a typed version at AppeWx 1 to this report.

5. RECOMMENDATIONS

5.1 The following recommendations are put forward based on the findings of the BOI and it is further recommended that they are to be adopted and/or complied with by the [Demining group]-II and where applicable by the wider SudanMAP community.

5.1.1 That the [Demining group]-II undergoes a refresher training programme at the earliest possible opportunity and prior to recommencing operational mine clearance activities. This programme is to be submitted to UNMAO for approval and is to consist of all applicable activities.

5.1.2 That 'special monitoring' of the refresher training is conducted by UNMAO on a regular basis the results of which are documented and recorded as appropriate. Furthermore, the [Demining group]-II will not be allowed to recommence operational mine clearance activities until approved to do so by UNMAO.

5.1.3 That those areas already `cleared' within M/F 91 are subjected to further QC processes in the form of MDD and/or mech to ensure no further incidences of missed mines have occurred.

5.1.4 That the on-site documentation is amended to reflect sufficient detail to provide an effective and efficient auditable trail of all clearance and QC activities. This should be regularly audited as part of internal/external QA/QC procedures to ensure legibility, detail and clarity.

5.1.5 That SOPs and other applicable documentation are reviewed and amended to provide clearer and more concise details of QC procedures that cover in an effective manner foreseeable eventualities.

5.1.6 That documented procedures as required by accredited SOPs, NTSG and/or other applicable documentation are to be complied with and adhered to. They are not to be circumvented in any manner unless appropriate processes relating to gaining appropriate authorisation are complied with. Most significantly this applies to the [Demining group]-II leave rotation plan and the requirement to ensure that appropriate, sufficient and effective Command & Control elements are in place at all times as per accreditation.

5.1.7 External/Internal QA procedures must adhere to documented processes and responsible appointments must ensure that all non-conformities are recorded and acted upon in the appropriate manner and as per documented procedures.

5.1.8 The BOI agrees with and endorses the recommendation made at paragraph a, page 21 under the title 'Recommendations of the Court' of Reference C/Inclusion 3 to this report.

6. SUMMARY

6.1 At approximately 07:55hrs on 21 November 2007 a mine accident occurred within the hazardous area of Minefield NR 91 during operations being conducted as part of Task NR 206. The accident resulted in injuries being sustained by a member of the MCT 1 of the [Demining group]-II.

6.2 As a result of the injuries sustained by the casualty, casevac from the hazardous area to the Level 1 facility at Kurmuk was required and subsequently from there to the Level 2 facility at Damazin and onward to further medical care facilities.

6.3 A BOI was convened in order to document the findings resulting from the investigation into the accident, relevant events pre and post accident, to provide conclusions as to the probable and most likely causes and to provide pertinent recommendations aimed at reducing the possibility of such an occurrence happening again and at improving and/or correcting procedures pre and/or post accident.

6.4 Whilst this is a serious and possibly avoidable incident, it should not detract from the excellent and admirable achievements of the [Demining group]-II to date. However, to ensure that the likelihood of incidences of this nature being repeated by the [Demining group]-II and/or by the wider mine action community are reduced to acceptable levels, it is recommended that the recommendations within this report are complied with and implemented as detailed.

7. RECOGNITION

7.1 The Chairman of the BOI thanks the CO of the [Demining group]-II for hosting the BOI and for providing all assistance and support as requested.

7.2 Further thanks are extended to the members of the BOI for their participation and assistance in concluding their assigned duties in this matter.

8. BOI MEMBERS SIGNATURES

8.1 The BOI Members have endorsed this report in the draft as presented here by providing a signed declaration as found at 'Inclusion 8'. If thought pertinent additional comments by individual members are also recorded.

Signed: Date: 05/12/07

Rank/Position: Sudan MAP National QA Coordinator BOI Chairman

Annex A to Convening Order UNMAO/[Demining group]/Kurmuk/A/01 (as amended)
Date — 05 December 2007

Member 2 Maj [Name removed], ATO [Demining group] -II Disagrees following:

a. Not inclusion of one of the conclusion that "on the day area, in which the accident took place was cleared, the organisation/task structure working in the minefield and the place of the accidented site was in order".

b. Exclusion of para 3.3.1 and 3.3.2 of this BOI being shown reservation of the Chairman nullifying fact/evidence of remining shown in internal investigation report of the [Demining group]-II whereas the fact/evidence has already been established at conclusions and recommendations of this BOI. And reservation of the find's have nothing to play any part during/outcome of the investigations of this BOI.

Member 3 [Name removed] (Reservation)

I [Name removed] of [Demining group]-II being member of the BOI disagree with para 3.3.1 of the Preliminary Investigations 'PI' particularly and generally as a whole except all those references relevant to the incident. This PI is suppose to be nullified as we are finding the facts. I think this has no relation with the BOI findings and recommendations. On the other hand copy of Internal Investigations is with BOI. This is opinion of the organisation and legal document. It also reflects opinion of organisation in finding/conclusion of BOI. Para 3.3.1 of PI does not reflects the fact, if it same then it is personal opinion. BOI is here to find facts. This is irrelevant to BOI.

Victim Report

Victim number: 757 **Name:** [Name removed]

Age: 36 **Gender:** Male

Status: supervisory **Fit for work:** not known

Compensation: UN compensation

Time to hospital: 25 minutes

Protection issued: Not recorded

Protection used: Worn but not recorded in detail

Summary of injuries:

severe Foot

COMMENT: See Medical report.

Medical report

IMSMA report: DoB: 2-3-1971:

Injury to: Lower limbs

Time to first hospital: 25 minutes

The person wore PPE.

Device: M14 AP mine

History of Present Illness

Patient was injured on the date, time and location as mentioned above.

Onsite he had severe injury at his Left Foot – posterior part of the ankle with severe bleeding from his wound.

Basic life support was provided onsite by medic within 10min of the incident.

The patient was moved to level I clinic and received by the attending doctor.

The wound was opened and wound was inspected by the Medical Officer at Level I clinic.

On Examination

The patient looked ill, not in pain. Vital signs were normal.

Wound was dressed and the whole limb was raised.

No fragmentation was found on inspection.

No Metal Fragmentation was found on x-ray

Management:

Bleeding was stopped with proper dressing on site.

Wound debridement was done at level I and under general anaesthesia at level II.

IV fluids were given with broad spectrum antibiotics.

The left lower limb was put on a splint.

Recommendations and Conclusion

This kind of injury was due to explosion.

The patient received proper management at all levels.

Patient needs to be transferred to hospital with orthopaedic and plastic surgery facilities.

Further information could be obtained from the treating surgeon at Level II Hospital.

Signed: National Medical Advisor, UNMAO

Statements

Statement by UN QA Officer

STATEMENT BY [Name removed] (UNMAO QA OFFICER DAMAZIN SUB-OFFICE) IN RESPECT TO … ACCIDENT THAT ACCURED IN KURMUK ON 21 NOV 07

I the above mentioned hereby state the following concerning the above mentioned accident:

My primary delegated responsibility is to conduct external monitoring of organization in AOR (Area of responsibility) by visiting all task sites as often as practicably possible. Visits are coordinated to occur at the beginning of organization arrival in AOR, during training, during commencement of the task, when task is in progress and on completion of the same.

[Demining group] 2 is one of the organizations in AOR hence I have a working relationship with them.

Brief background of [Demining group]:

Advance party arrival of the company: 22nd May 2007

Main party arrival of the company: 15th June 2007

Refresher training of advanced party: 30th May 2007 -16th June 2007

Refresher training of complete de-mining company: 17th June 2007- 5th July 2007

QA training that I conducted: 26th June 2007 and 28th June 2007.

The result of this training (QA) was FAIL.

My comments on the QA were as follows:

- Failure to observe basic de-mining drills.
- Procedures not being taught inline to the organization SOP.
- Instructors not giving correct answers to all questions.
- Instructors not correcting faults during practical training.
- Need for improvement of QA/QC process during the training.

External Monitoring Visits:

During my visits to this particular team on various dates, twelve (12) IMSMA QA were completed and concerns/ suggestions reflected accordingly. The same results/concerns were on all occasions discussed with team leaders and the OC who oftenly availed himself onsite during my said visits.

Monitored Activities:

1. Command and Control General comments:-

- QA checks not correctly logged.
- Team leader needs to improve on documentation.
- Some areas not clearly marked.

2. Manual clearance:- General comments:-

- Minor non-conformities of entries in the task map.
- Good progress of task execution.
- Good drills and procedures.
- Good command and control.
- Minor non-conformities with regard to item found and recorded.
- Minor non-conformity of QA logging.

3. General team leader

Minefield marking - Comments noted for future compliance:-

- Non-conformity of progressive QC inspection marking, not adhering to standards and bench marking.
- Discipline in the minefield.
- Good command and control.
- Despite the marking conforming to organization SOP and NTSG, there was minor non - conformity of reference point on the ground.
- The marking does not meet the onsite requirement.

4. Team leader comments - Points noted for future compliance:- Commanding Officer's concern regarding QA/QC after the accident:

Q - Did the QA officer ever dig a pit to see the depth of the excavation?

A - NO.

My Answer - I absolutely agree with the officer commanding that I never dug a pit because it is not the right procedure according to guidelines in place and organization SOP. I have always had an excavation operator on site for depth checks. This was done during my only confirmation of QC checks and the operator by then was [Name removed] as reflected during the sampling QA on that day. The normal procedure has been to stop the de-miner, move him backwards and then with a 15 cm stick check if the already excavated area is up to the required depth of 15cm. Regarding the sampling process I always go through the area that has been QC by the team leader and section commander and would move my QC stick to theirs to confirm what is documented in their QC log. It is well pointed out in their SOP that checks will be conducted by the platoon commander, section commander and de-miner and would be carried out in the same manner as detector method.

The right procedure that I pointed out to them and brought to the attention of the OC and all the team leaders in the presence of the regional QA officer and Damazin OPS officer was excavation of 1x1M trench of a 15cm depth during the team on-site assessment. They reluctantly did not adopt giving reasons that it was not in their NTSG and their organization SOP. This was verbal guidance to OC and his team leaders regarding excavation during on-site assessments of their teams. I had insisted on ensuring that the QC process does not override missed action/safety during excavation. The issue was later further sought for clarification via emails.

My advice to them was that during excavation clearance, deminers work in lanes of the same configuration to those used during detector work. Excavation techniques can often seem

slower than detector work, but are useful under difficult circumstances. I reminded them that it should always be remembered that the excavation method provides the highest level of clearance confidence of any technique, therefore there was need for strict supervision during the actual clearance to avoid missed action due to difficulties in checking key elements in the whole excavated area.

The guidance/advice given was that before starting the excavation the depth to which the search should take place must be carefully considered. Anti-personnel mines are usually laid at a depth of less than 10cm, but local topography can result in soil shifting that may have buried the mines to a greater depth.

The starting point should be selected inside the known safe area. A trench 1,2m wide and to the required depth, usually 15cm, and as indicated in figure 1 [Diagram omitted] below that is dug alongside the line marking the boundary of safe and dangerous ground. The trench should be at least 1 metre from front to rear, to ensure that the de-miner can squat on the trench floor.

Digging of the initial trench which falls within safe ground may be carried out using spades or hoes which are faster. To advance the excavation into the dangerous area, the de-miner uses a trowel to scrape the front face of the trench to the rear.

This was demonstrated to them and they were reminded that safety was a priority in all procedures. This was neither adopted nor amended in their SOP as per my advice/guidance and could not reflect in QA reports because it was not non-conformity to their SOP. Procedure during QC of digging holes as was seen after accident was incorrect according to their SOP and NTSG.

My role for confirmation concerning excavation is during the post clearance phase which is clearly mentioned in the NTSG.

The OC's concern that Sgt [Name removed] gave briefing to QA Officer which was never objected by QA Officer —is incorrect because I declined in a polite (different) way as explained below:

- On my arrival at the work site the platoon commander was not on site and I was informed he would come in 5 minutes.
- I accepted to be briefed by the Sgt on the ongoing activities as we waited for the platoon commander. Sgt briefed me commendably but I did not ask him questions/ clarification in anticipation of doing that with the platoon commander who was in-charge of the site on that particular day despite having excused himself for whatever reasons he had.
- When the platoon commander arrived I informed him that Sgt had briefed me in general and that I was waiting for him to clarify specific issues of concern on what had been pointed out. The bone of contention was the task map which was not in accordance to NTSG. After questions/ clarifications and after he told me that he would take corrective actions, he gave me his safety brief after which I signed a demnity form and we proceeded with him to the minefield. All this is documented on the QA form for that day and signed by Captain [Name removed] and not Sgt [Name removed]. lt is well understood that whoever signs of the QA form is in charge of that minefield.
- I normally cultivate confidence in all personnel, right from the deminers and team leaders by listening to issues that are their direct responsibility and one (1) step higher than their responsibility. According to the organization responsibilities structure

(SOP) one (1) up is acceptable and not two (2) up, which has never happened with my knowledge. With all due respect to military ethics, I strongly feel that issues regarding ranks and appointment in the minefield, military appointments at the worksite should supersede military ranking especially during operation to ensure that experienced people make decisions on technical details. Command elements of the company have been a key problem issue for sometime but after lengthy deliberations, it was agreed that supervision would always be as in SOP. Deliberations/request for supervisory role of the subject matter is via emails by the OC to the Sub-Office which can be availed if requested by the board.

My opinion of issues that need to be addressed to avoid similar occurrences in future:

- Adhering to the command structure as reflected in the organization structure as per their SOP and not what has been currently happening with constant change of key persons in both teams. It is agreed that management of personnel is the company's responsibility but should be with consultation with UNMAO Sub-Office.
- Improvement of supervision level can be realized if team leaders and section commanders perform their duties and independently carry out their tasks irrespective of the system ranking structure, the most important aspect is that they are appointed and trained in those duties.
- Ensure that administrative problems do not impact on personnel working in the minefield. as documented in my QA report.
- Key team personnel (especially those in supervisory role) should be onsite when work is ongoing as clearly pointed out in my QA report dated 23/08/07, whereby I pointed out to the team leader to strive towards ensuring that all operational equipment, stores and personnel are in place during operations.
- Headquarters should improve coordination of the two teams and leave planning, general administration of the company and other duties to company support personnel as opposed to engaging operation personnel to the extent of adversely affecting supervision of the teams.

Finally, from my two years experience in the AOR, cases of re-mining or any indication that it could occur have never emerged. [Demining group] 1 worked in the same general area and interference/intrusion by the locals was more but such an incident never occurred. Similarly [International NGO 1] worked in the same general area with [International NGO 2] clearance teams in vicinity. The efforts displayed by the [Demining group] 2 deminers has been commendable taking into account the challenges faced due to terrain, vegetation and weather conditions. [Demining group] 2 requires constant support from the presently appointed command on safety, effectiveness and efficiency when carrying out their duties.

If the board requires any clarifications in this statement, I am willing to meet them.

[Signed.]

Analysis

The primary cause of this accident is listed as a “Field control inadequacy” because the investigation determined that the accident occurred on “cleared” land that had not been processed to the required depth. The demining group left inexperienced personnel in charge in the field and one of them was the Victim in the accident.

The site was severely disrupted after the accident, presumably in the attempt to avoid censure. The disruption included moving the marking and the apparent levelling of the crater. AP mine blasts do not leave level loose ground that must be dug out to determine the depth of ground disturbance. Digging did not confirm the depth at which the mine had detonated. It did confirm that the undisturbed ground marked the depth of the original excavation, proving that the ground was not processed to the required depth during clearance. Because disturbed ground has more bulk than compacted ground, the actual depth of clearance was probably less than that measured.

The secondary cause is listed as a “Management control inadequacy” because the demining group’s managers placed staff in positions of field responsibility for which they were not prepared, and because the UN QA system recognised but did not correct this error. The UN QA officer’s statement shows an intelligent approach promoting teamwork, but it may be that, when dealing with a military hierarchy, a more dogmatic approach to QA would be appropriate.

The mine type was not positively determined but was [by inference] either the PRB M35 or the M14. Because far more PRB M35s have been found than M14s, a PRB M35 is presumed.